

SHORT REPORT

Neonatal resuscitation of extremely low birthweight infants: a survey of practice in Italy

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Delivery room management of extremely low birthweight infants (ELBWIs) has been little studied. A questionnaire was sent to the heads of the 86 Italian neonatal intensive care units provided with on site delivery. The practice of and approach to the resuscitation of ELBWIs were very different among the centres surveyed, reflecting a paucity of evidence and consequent uncertainty among clinicians.

Neonatal resuscitation remains an often practised but poorly studied intervention.^{1–3} In particular, there are no published studies specifically looking at the management of extremely low birthweight infants (ELBWIs) at birth.³

We aimed to survey the practice of and approach to neonatal resuscitation of ELBWIs in Italian tertiary centres.

METHODS

In Italy, there are 91 neonatal intensive care units; they are located in hospitals with varying numbers of deliveries (median 1560; range 500–6200), are generally small in size (median 5; range 2–15 cots), and have median 15 (range 1–63) ELBWIs admitted a year (Italian Society of Neonatology database).

A structured 73 item questionnaire and an accompanying introductory letter were sent by email to the heads of the 86 neonatal intensive care units provided with on site delivery. Questions covered the main areas of neonatal resuscitation based on the Neonatal Resuscitation Program (NRP).⁴ The questionnaire included items on the equipment and practice of the centre, and questions referred to the neonatal resuscitation of the ELBWIs during the period 1 January to 31 December 2002. The questions included multiple choice, fill in, and yes/no questions.

Data are presented as numbers and/or percentages, as appropriate.

The study was approved by the local ethics committee.

RESULTS

Information was obtained for 76 (88%) centres. They achieved a homogeneous representation of the country (table 1).

Temperature

The median environmental temperature of the resuscitation suites was 24°C (range 18–31). Five of the 76 centres (6%) routinely used a polyethylene occlusive wrap for temperature support of ELBWIs.

Oxygen delivery

Resuscitation with 100% oxygen was used at 42 of the 76 centres (55%); at the remaining 34, various oxygen

Table 1 Centres to which questionnaires were sent and from which replies were received in relation to the geographical area

	No sent	No returned
North Italy	39	35
Central Italy	15	13
South Italy and Islands	32	28

concentrations (median 40%; range 21–70) were provided at birth in this group of patients. In the delivery suite, a pulse oximeter for transcutaneous saturation monitoring was available at 55 centres (72%). It is routinely positioned within 5, 10, and 30 minutes in 50%, 88%, and 100% of the centres respectively.

Positive pressure ventilation

Positive pressure ventilation was manually administered at 63 (83%) centres. At the remaining 13, it was administered using a ventilator or a T piece circuit. Positive end expiratory pressure (PEEP) was routinely used at 26 (34%) centres. The median PEEP value was 4 cm H₂O (range 3–6).

Intubation

At birth, intubation of ELBWIs was based on an individualised strategy at 66 (87%) centres. Oral intubation was the preferred route at 40 (53%) centres; at the remaining 36 (47%) nasal intubation was routinely performed.

During 2002, 791 of 1072 ELBWIs (73.7%) born at the 68 responding centres were intubated at birth.

Chest compressions

Of the 72 responding centres, 22 (30%) used the two thumb technique, 18 (25%) the two finger technique, and 32 (46%) both methods. In 2002, 230 of 1061 ELBWIs born at the 66 responding centres (21.6%) received chest compressions.

Drugs

Drugs were administered to 93 of 1061 ELBWIs (8.7%). Of these, 86 (92%), 21 (22%), and three (3%) received adrenaline (epinephrine), bicarbonate, and volume expanders respectively.

Thirty centres (39%) routinely administered surfactant in the delivery setting, and all used natural surfactant preparations. Of these, 17 (57%) administered surfactant therapy to all preterm infants of gestational age <28 weeks (range 26–34); the remaining 13 treated all ELBWIs needing intubation for resuscitation.

Abbreviations: ELBWI, extremely low birthweight infant; NRP, Neonatal Resuscitation Program; PEEP, positive end expiratory pressure

What is already known on this topic

- There is a lack of information on delivery room management of extremely low birthweight infants

What this study adds

- This survey shows that management of these infants at birth is very different across Italian tertiary centres, reflecting a paucity of evidence and consequent uncertainty among clinicians

DISCUSSION

There is a lack of information about the delivery room management of ELBWIs.³ As adequate management of this group of patients at birth could be very effective, we aimed to evaluate neonatal resuscitation in this high risk population.

Our data reflect the practice of the vast majority (88%) of Italian tertiary centres in relation to the most crucial points of ELBWI management at birth. On the whole, we found large differences among the participating centres, showing that the application of the NRP guidelines in the clinical setting is low.⁴ Some showed apparently high compliance with the NRP guidelines—for example, provision of 100% oxygen. Others showed a different approach based on the results reported in recent studies evaluating specific interventions in this group of patients at birth—for example, the use of a polyethylene occlusive wrap, the administration of low oxygen concentrations, the use of PEEP.^{1,3}

Furthermore, our data show that a large proportion of the ELBWIs born at Italian tertiary centres were intubated (74%), and received chest compression (22%) or drugs (9%). These percentages are very different among the participating centres. However, they are higher than in other studies,⁵ and need further evaluation.

In conclusion, this survey shows that management of ELBWIs at birth is very different across Italian tertiary centres, reflecting a paucity of evidence and consequent uncertainty among clinicians. Further prospective research in this field is needed.

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REFERENCES

- 1 **Finer NN**, Wade DR. Neonatal resuscitation: raising the bar. *Curr Opin Pediatr* 2004;**16**:157–62.
- 2 **O'Donnell CPF**, Davis PG, Morley CJ. Positive pressure ventilation at neonatal resuscitation: review of equipment and international survey of practice. *Acta Paediatr* 2004;**93**:583–8.
- 3 **O'Donnell CPF**, Davis PG, Morley CJ. Resuscitation of premature infants: what are we doing wrong and can we do better? *Biol Neonate* 2003;**84**:76–82.
- 4 **Kathwink J**, ed. *Neonatal resuscitation program: textbook of neonatal resuscitation*, 4th ed. Washington DC: American Academy of Pediatrics/American Heart Association, 2000.
- 5 **Finer NN**, Horbar JD, Carpenter J. Cardiopulmonary resuscitation in very low birth weight infants: The Vermont Oxford Network Experience. *Pediatrics* 1999;**104**:428–34.

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